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## REMARKS

### I. PRELIMINARY REMARKS

No claims have been amended, added or canceled. Claims 1-35 and 53-62 remain in the application. Claims 10, 11, 16 and 17 have been withdrawn from consideration. Reexamination and reconsideration of the application are respectfully requested.

### II. REJECTION UNDER 35 U.S.C. § 103

#### A. The Rejection

Claims 1-9, 12-15, 18-35 and 53-62 have been rejected under 35 U.S.C. § 103 as being unpatentable over the combined teachings of U.S. Patent Pub. No. 2001/0045364 to Hockaday et al. ("the Hockaday '364 publication") and U.S. Patent No. 5,070,899 to Matkovich et al. ("the Matkovich '899 patent"). The rejection under 35 U.S.C. § 103 is respectfully traversed. Reconsideration thereof is respectfully requested.

#### B. The Cited References

The Hockaday '364 publication discloses a variety of hydrogen generation devices that provide a **controlled fuel stream**. [Abstract and paragraph 0017.] One of the key features of the Hockaday generation devices is that they are **operable in any orientation**. [Abstract and paragraph 0017.] As illustrated in Figure 9, which was referenced in the Office Action, one of the hydrogen generation devices stores fuel 7 in a wicking material 114 that is inside a bladder 113. The bladder 113 maintains pressure on the fuel 7. A puncture needle 111 is used to connect the bladder 113 to a container 122 with catalytic surfaces 107. Hydrogen gas, which is produce as a result of the interaction between the fuel 7 and the catalytic surfaces 107, is free to flow out of the container 122.

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In order to control gas production, the flow of fuel 7 through the needle 111 is actively controlled by a valve 110. In other words, ***absent the ability to close the valve 110***, fuel 7 would be forced through the needle 111 by the bladder 113, and hydrogen gas would ***flow uncontrollably*** out of the container 122.

Turning to Figure 3, the Hockaday percolation generator 12 includes fuel 7 and wicking material 39 within a porous hydrophobic liner 32. The liner 32 is located within an elastic chamber 38. A capillary tube 40 with a catalyst coating 33 is located within an unnumbered structure positioned within the wicking material 39. It appears that the capillary tube 40 receives fuel 7 by way of the capillary exit 35. Hydrogen produced by the reaction within the capillary tube 40 exists the unnumbered structure through a filter 31. Fuel 7 and, apparently, byproducts are returned to the interior of the liner 32 by way of an exit 34 and a vent 42. Excess hydrogen that fills a void 36 between the liner 32 and elastic chamber 38 as the fuel 7 is consumed is vented by a gas pressure vent 37.

Referring first to Figure 1, the Matkovich '899 patent discloses a check valve 10 that is designed to ***facilitate the downward flow*** of a first liquid and to prevent upward flow (i.e. backflow) through the valve. [Column 2, lines 1-19.] The first fluid is free to flow in one direction and backflow is prevented. In other words, there is ***no "closed" setting*** for the valve. The configuration of the check valve 10 is also such that it operates only when in a generally vertical orientation. If, for example, the check valve was turned sideways or upside down, the first liquid would flow back through the porous elements 12 and 13 because the porous elements are specifically designed to facilitate liquid flow. [Column 3, lines 25-30; and column 5, lines 8-19.] Turning to Figure 2, the Matkovich '899 patent discloses a check valve 20 for gas that is designed to facilitate upward flow and to prevent downward flow (i.e. backflow) through the valve. [Column 2, lines 20-32.] Here too, there is no "closed" setting for the valve.

### C. Discussion Concerning Claims 1-9 and 53

Independent claim 1 calls for a combination of elements including "an open region that connects [a] fuel reservoir to [a] reaction chamber" and "a ***passive structure***

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located within the open region adapted to resist fluid flow from the fuel reservoir to the reaction chamber.” The respective combinations defined by claims 2-9 and 53 include, *inter alia*, the elements recited in claim 1.

Applicant respectfully submits that the cited references fail to teach or suggest the claimed combinations. For example, and as noted in the Office Action, the Hockaday valve 110 is not a “passive structure.” The Office Action has taken the position that it would have been obvious to replace the Hockaday valve 110 with the Matkovich fluid check valve 10. There are a variety of errors associated with this position. First and foremost, replacing the Hockaday valve 110 with a check valve that cannot prevent fluid flow and merely prevents backflow, i.e. the Matkovich fluid check valve 10, would destroy much of the functionality of the Hockaday hydrogen generation device.<sup>1</sup> Hydrogen will flow uncontrollably from the Hockaday container 122 unless there is a valve that can stop the supply of fuel 7 to the container. The Matkovich fluid check valve 10 is, on the other hand, specifically designed to facilitate fluid flow in the intended flow direction. The Hockaday hydrogen generation device is also designed to function at any orientation. The Matkovich fluid check valve 10 can only function in certain orientations and, accordingly, would further degrade the functionality of the Hockaday hydrogen generation device if used in place of the Hockaday valve 110.

It should also be noted for the sake of completeness that “a showing of a suggestion, teaching, or motivation to combine the prior art references is an ‘essential component of an obviousness holding.’” *In re Lee*, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002), *citations omitted*. The burden of showing obviousness may be satisfied “only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references.” *Id.* at 1434, *citations omitted*. Here, there is nothing in the references themselves, or a showing concerning knowledge in the art, that would have

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<sup>1</sup> As noted by the Federal Circuit and Patent Office Board of Appeals, it simply is not obvious to modify a prior art apparatus in such a manner that it will not function in its intended manner. See *In re Gordon*, 221 USPQ 1125, 1127 (Fed. Cir. 1984) and *Ex Parte Weber*, 154 USPQ 491, 492 (Pat. Off. Bd. Ap. 1967). See also MPEP § 2143.01.

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suggested the combination proposed in the Office Action.<sup>2</sup> There is also nothing in the references that might have suggested the combination proposed in the Office Action based on the nature of the problems being solved. *See, e.g., Ruiz v. A.B. Chance Co*, 69 USPQ2d 1686, 1690-91 (Fed. Cir. 2004).

Accordingly, applicant respectfully submits that the Office Action failed to make a *prima facie* case of obviousness with respect to claims 1-9 and 53 and that the rejection of claims 1-9 and 53 under 35 U.S.C. § 103 should be withdrawn.

#### D. Discussion Concerning Claims 12-15 and 54

Independent claim 12 calls for a combination of elements including "an open region that connects [a] fuel reservoir to [a] reaction chamber" and "a **passive structure located within the open region** adapted to create **capillary forces to resist flow** of the fuel containing substance from the fuel reservoir to the reaction chamber." The respective combinations defined by claims 13-15 and 54 include, *inter alia*, the elements recited in claim 12.

Applicant respectfully submits that the cited references fail to teach or suggest the claimed combinations. For example, and referring to Sections II-B and II-C above, the Hockaday '364 publication fails to teach or suggest a "passive structure" and there is simply no reason, other than a hindsight attempt to replicate the claimed inventions, to substitute the Matkovich check valve 10 for the Hockaday valve 110. The purportedly obvious modification would destroy much of the functionality of the Hockaday hydrogen generation device. There is also nothing in the references themselves to suggest combining them in the manner proposed in the Office Action, and the Office Action failed to point to any knowledge in the art that would have suggested the proposed combination.

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<sup>2</sup> It is worth reiterating here that the Hockaday fuel 7 is supplied to the container 122 under pressure and the resulting gas is free to flow out of the container. As such, the Office Action's "in order to prevent backflow" motivation to combine the references is unpersuasive at best.

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Accordingly, applicant respectfully submits that the Office Action failed to make a *prima facie* case of obviousness with respect to claims 12-15 and 54 and that the rejection of claims 12-15 and 54 under 35 U.S.C. § 103 should be withdrawn.

#### E. Discussion Concerning Claims 18-21

Independent claim 18 calls for a combination of elements including “an open region that connects [a] fuel reservoir to [a] reaction chamber” and “control *means*, associated with the open region, **for passively resisting fluid flow** from the fuel reservoir to the reaction chamber and permitting fluid flow from the fuel reservoir to the reaction chamber in response to the presence of a predetermined pressure gradient across the control means.” The respective combinations defined by claims 19-21 include, *inter alia*, the elements recited in claim 18.

Applicant respectfully submits that the cited references fail to teach or suggest the claimed combinations. For example, and referring to Sections II-B and II-C above, the Hockaday valve 110 does not perform the function of passively resisting fluid flow. The Matkovich '899 patent, which discloses a one way check valve, fails to remedy this deficiency. For example, the use of the Matkovich check valve 10 in place of the Hockaday valve 110 would destroy much of the functionality of the Hockaday hydrogen generation device. There is also nothing in the references themselves to suggest combining them in the manner proposed in the Office Action, and the Office Action failed to point to any knowledge in the art that would have suggested the proposed combination.

Accordingly, applicant respectfully submits that the Office Action failed to make a *prima facie* case of obviousness with respect to independent claims 18-21 and that the rejection of claims 18-21 under 35 U.S.C. § 103 should be withdrawn.

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#### F. Discussion Concerning Claims 22-30

Independent claim 22 is directed to a fuel cartridge comprising "a fuel reservoir" and "a reaction chamber." The "reaction chamber" includes "a catalyst, an inlet operably connected to the fuel reservoir, a gas outlet, **a liquid outlet that is not in fluid communication with the fuel reservoir** and a substantially gas permeable/substantially liquid impermeable structure that substantially surrounds the catalyst and separates the inlet from the gas outlet." The respective combinations defined by claims 23-30 include, *inter alia*, the elements recited in claim 22.

Applicant respectfully submits that the Hockaday '364 publication fails to teach or suggest the claimed combinations. For example, the only structures in the percolation generator 12 (Figure 3) that could be interpreted as a "liquid outlet" are the exit 34 and the vent 42. In contrast to invention defined by claim 22, the exit 34 and the vent 42 are clearly in fluid communication with the wicking material 39 and the interior of hydrophobic liner 32, which is where the fuel 7 is stored. [Paragraph 0107, lines 5-7.]

Applicant notes here that the Office Action failed to address the arguments above, which were also made in the amendment dated April 6, 2005. ***In order to clarify the issues for appeal, applicant respectfully requests that the next Office Action specifically identify, by reference numeral, the portion of the Hockaday device that purportedly corresponds to the claimed "liquid outlet that is not in fluid communication with the fuel reservoir."***

Turning to the Matkovich '899 patent, it is not entirely clear how the Matkovich '899 patent even relates to the inventions defined by claims 22-30 in the context of the rejection under 35 U.S.C. § 103. Nevertheless, applicant respectfully submits that the Matkovich '899 patent fails to remedy the above-identified deficiencies in the Hockaday '364 publication.

Accordingly, applicant respectfully submits that the Office Action failed to make a *prima facie* case of obviousness with respect to claims 22-30 and that the rejection of claims 22-30 under 35 U.S.C. § 103 should be withdrawn.

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#### G. Discussion Concerning Claims 31-35

Independent claim 31 is directed to a "reaction chamber" that comprises "an external housing defining a first reactant inlet, a liquid outlet and a gas outlet" and "a substantially gas permeable/substantially liquid impermeable structure located within the external housing that separates the first reactant inlet and the liquid outlet from the gas outlet." The respective combinations defined by claims 32-35 include, *inter alia*, the elements recited in claim 31.

Applicant respectfully submits that the Hockaday '364 publication and the Matkovich '899 patent, whether viewed alone or in combination, fail to teach or suggest the claimed combinations. For example, the Hockaday filter 31 and hydrophobic liner 32, which purportedly together correspond to the claimed "substantially gas permeable/substantially liquid impermeable structure," do not appear to separate a "first reactant inlet" and a "liquid outlet" from a "gas outlet." The Matkovich '899 patent fails to remedy this deficiency. Accordingly, applicant respectfully submits that the Office Action failed to make a *prima facie* case of obviousness and that the rejection of claims 31-35 under 35 U.S.C. § 103 should be withdrawn.

***In order to clarify the issues for appeal, applicant hereby request that the next Office Action identify, by reference numeral, which elements in the cited references purportedly correspond to the claimed "first reactant inlet," "liquid outlet," and "gas outlet" and explain how the "substantially gas permeable/substantially liquid impermeable structure ... separates the first reactant inlet and the liquid outlet from the gas outlet."***

#### H. Discussion Concerning Claims 55-62

Independent claim 55 calls for a combination of elements comprising "fuel reservoir," ***a reaction chamber*** defining an interior surface, a fuel inlet and ***a single gas outlet***," "an enclosed substantially gas permeable/substantially liquid impermeable structure defining an interior operably connected to the fuel inlet and an exterior surface

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and located within the reaction chamber such that a gap extends around the exterior surface from the exterior surface to the interior surface of the reaction chamber and the gap is in gaseous communication with the **single gas outlet** and "a catalyst located within the enclosed substantially gas permeable/substantially liquid impermeable structure." The respective combinations defined by claims 56-62 include, *inter alia*, the elements recited in claim 55.

Applicant respectfully submits that the Hockaday '364 publication and the Matkovich '899 patent, whether viewed alone or in combination, fail to teach or suggest the claimed combinations. For example, the Office Action appears to have taken the position that the Hockaday container 38 corresponds to the claimed "reaction chamber." Even assuming for the sake of argument that this is a reasonable interpretation of the claims, the Hockaday container has a **pair of gas outlets**, one at the top and one at the bottom. [Note Figure 3 and paragraph 0108.] The Matkovich '899 patent fails to remedy this deficiency. Accordingly, applicant respectfully submits that the Office Action failed to make a *prima facie* case of obviousness and that the rejection of claims 55-62 under 35 U.S.C. § 103 should be withdrawn.

### III. CLOSING REMARKS

In view of the foregoing, it is respectfully submitted that the claims in the application are in condition for allowance. Reexamination and reconsideration of the application are respectfully requested. Allowance of the claims at an early date is courteously solicited.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is respectfully requested to call applicant's undersigned representative at (310) 563-1458 to discuss the steps necessary for placing the application in condition for allowance.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 08-2025. Should such



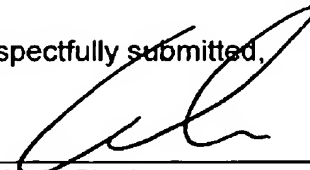
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fees be associated with an extension of time, applicant respectfully requests that this paper be considered a petition therefor.

3/13/06  
Date

Respectfully submitted,

  
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